

Application No. 10/707,465
Technology Center 1763
Amendment dated March 16, 2006
Reply to Office Action of December 16, 2005

Amendments to the Specification:

Please replace paragraph [0003] with the following amended paragraph:¹

An aluminizing process capable of selectively coating the internal cooling passages of a turbine blade involves injecting a slurry into the passages. As with other types of processes employed to form aluminide coatings, the slurry aluminizing process relies on aluminiding vapors that react at exposed surfaces to form a diffusion aluminide coating. More particularly, the slurry process makes use ~~makes us~~ of a coating powder comprising a metallic aluminum source (such as aluminum or an aluminum alloy, e.g., CrAl, CoAl, FeAl, and TiAl), a carrier or activator (such as an alkali metal halide), and an inert oxide dispersant (such as alumina (Al₂O₃) or zirconia (ZrO₂)). These solid particulate components are mixed with an organic or inorganic liquid, whose role is a rheological additive to facilitate the injection of the coating powder into the often complex system of internal cooling passages present in a turbine blade. An

¹ All references to pages and paragraphs in Applicant's electronically-filed application are those inserted by the USPTO authoring software.

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example of a suitable inorganic binder is hectorite clay in water, while examples of particularly suitable organic binders include acrylics such as polymethylmethacrylate (PMMA), butyl methacrylate resin, ethyl methacrylate resin, methyl methacrylate resin and methacrylate co-polymer resin. Other organic binders that may be used include methyl cellulose, acrylic lacquer, alkyd resins such as phenolic-modified alkyd and phenolic-modified soybean alkyd, shellac, rosin, rosin derivatives, ester gum, vinyls, styrenics, polyesters, epoxides, polyurethanes, cellulose derivatives, and mixtures thereof. Once the mixture is injected, the liquid is removed by drying, after which the component containing the dried coating media is heated in an inert or reducing atmosphere to a temperature of 1700°F (about 930°C) or more. At the elevated temperature, the activator vaporizes and reacts with the aluminum source to form a volatile aluminum halide, which then reacts at the surfaces of the passages to form the aluminide coating.